

CFS-H SERIES - INSTALLATION GUIDE

Information to consider before installing your TERRA Food-Tech® autoclave.

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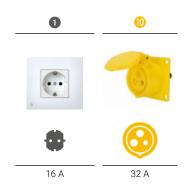
CFS-H SERIES

CFS-21H

ELECTRICAL CONNECTION STANDARD

The following table shows the plug configuration according to IEC and SCHUKO international standards. For customers who require other plugs and other electrical configurations, please contact our technical team.

MODELS	FREQUENCY	POWER	AMPERES / PHASE	VOLTAGE	CONNECTION
CFS-21H	50/60 Hz	2000 W	9 A	230 (1P+N+PE) V	16 A 1
CFS-21H-115V	50/60 Hz	2000 W	17 A	120 (1P+N+PE) V	32 A 🕕



ELECTRICAL CONNECTION NORTH AMERICA

The following table shows the plug configuration according to the NEMA standard for the United States and other countries. For customers who require other plugs and other electrical configurations, please contact our technical team.

MODELS	FREQUENCY	POWER	AMPERES / PHASE	VOLTAGE	CONNECTION
CFS-21H-115V-US	50/60 Hz	2000 W	17 A	120 (1P+N+PE) V	NEMA 5-30P 1



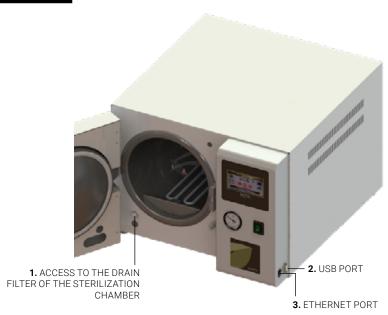


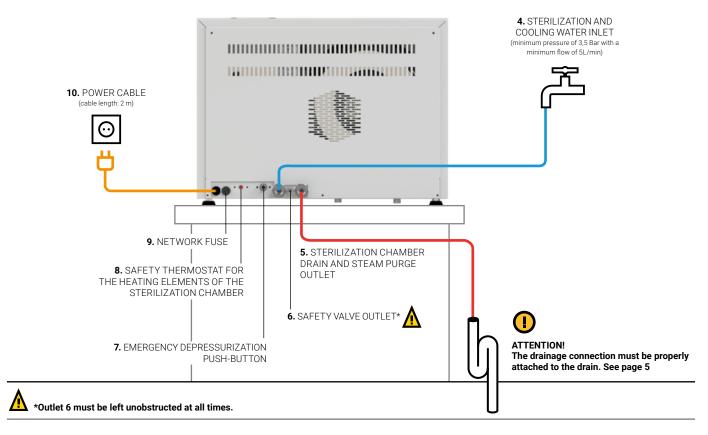
5-30P



CFS-21H

CONNECTIONS GRAPH





CFS-H SERIES

CFS-21H

COMPONENTS INCLUDED

In addition to the accessories chosen at the time of purchase of the autoclave (basket, bag supports, frame, trays, water softener, software kit, additional drilling kits, etc.), the following components are always included:



1 stainless steel protective cover for the heating elements of $175 \times 390 \text{ mm}$ to place on the inner base of the sterilization chamber.



1 auxiliary plastic tray, 200 x 280 mm, to collect the condensed water after opening the door or while cleaning the filter.



2 reinforced NBR hoses 2 m long with 3/4" connection at both ends for threaded connection of the equipment with tap and drain (gaskets included).

For:

- 4. STERILIZATION AND COOLING WATER INLET
- 5. STERILIZATION CHAMBER DRAIN AND STEAM PURGE OUTLET



Drilling kit for containers with metallic lids with the following components:

- 1 perforation bore
- 10 Ø4 mm rubber gaskets
- 5 Ø4 mm rubber O-rings
- 5 metallic drill nuts
- 16 plastic spacers, 2 of each of the following sizes: 20, 30, 40, 50, 60, 70, 80 and 90 $\,\mathrm{mm}$

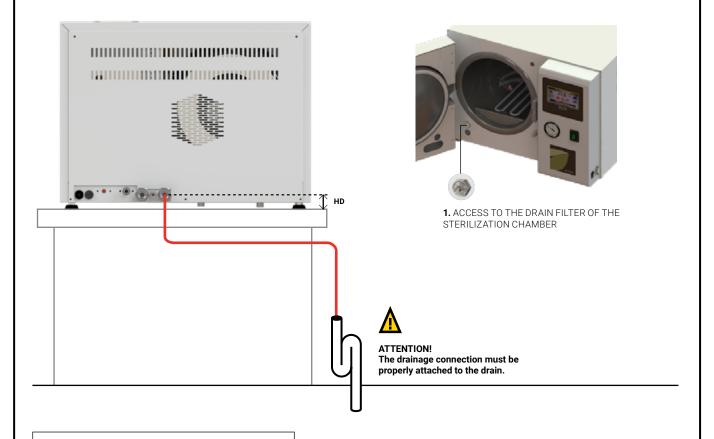
CFS-H SERIES

CFS-21H

DRAINAGE CONNECTION

CFS-21H autoclaves have a STERILIZATION CHAMBER DRAIN AND STEAM PURGE OUTLET (5) which must be connected to a drainage using the provided hose. The autoclave mixes cold water from the mains with hot water coming from inside the sterilization chamber, which drastically reduces the temperature at which water is conducted to the drainage from a maximum of 70 °C to 50 °C depending on the cycle used and the mains water temperature.

To clean the drain filter, loosen the screw on the ACCESS TO THE DRAIN FILTER OF THE STERILIZATION CHAMBER (1) while placing the provided plastic tray underneath to collect any remaining water.



CONSIDER:

Drain and steam purge connection height and position in relation to the autoclave support area.

MODEL	HD STERILIZATION CHAMBER DRAIN AND PURGE OUTLET HEIGHT
CFS-21H	33 mm

CFS-H SERIES

CFS-21H

WATER SUPPLY FOR STERILIZATION AND COOLING

CFS-H Series autoclaves have automatic filling of the sterilization chamber inner base where the heating elements are located, which produce steam during normal operation of the autoclave. They also have automatic filling of the sterilization chamber using water shower during the final fast cooling phase.

Soft water must be used (see table below) to prevent the settling of lime residue inside the deposit. Input options A and B are available using the STERILIZATION AND COOLING WATER INLET (4) connection with the provided hose.

A. Using a soft water network that will directly connect to the automatic water supply inlet of the autoclave.



SOFT WATER NETWORK 3/4" GAS TAP Minimum pressure of 3,5 Bar with a minimum flow of 5L/min

B. Using a hard water network going through the water softener and connecting this to the automatic water supply inlet of the autoclave.



HARD WATER NETWORK 3/4" GAS TAP Minimum pressure of 3,5 Bar with a minimum flow of 5L/min



WATERSOFT-11 water softener (accessory)



WATER TYPE	MG/L ¹	FH ²	DH ³	EH⁴
Soft water	≤17	≤1.7	≤0.95	≤1.19
Slightly hard water	≤60	≤6.0	≤3.35	≤4.20
Moderately hard water	≤120	≤12.0	≤6.70	≤8.39
Hard water	≤180	≤18.0	≤10.05	≤12.59
Very hard water	>180	>18.0	>10.05	>12.59

 $^{^1}$ Mg/L: calcium carbonate (CaCO $_3$) milligrams per liter of water. 2 FH: French hardness (10.0 mg CaCO $_3$ /L).

³ DH: German hardness (17.8 mg CaCO₃/L). ⁴ EH: English hardness (14.3 mg CaCO₃/L).

CFS-21H

WATER SOFTENER INSTALLATION

If you don't have a soft water main available where you intend to install your CFS-21H autoclave, we recommend using the WATERSOFT-11 water softener.

The WATERSOFT-11 water softener comes with all hoses needed for installation (hoses are 2 meters long), one particle filter equiped with a cartridge and a water hardness measuring kit.

The HARD WATER MAINS INLET (A) must be connected from the water softener to the water main with the provided 2m hose after going through the included sediment filter (water temperature from the main must be between 5 °C and 38 °C).

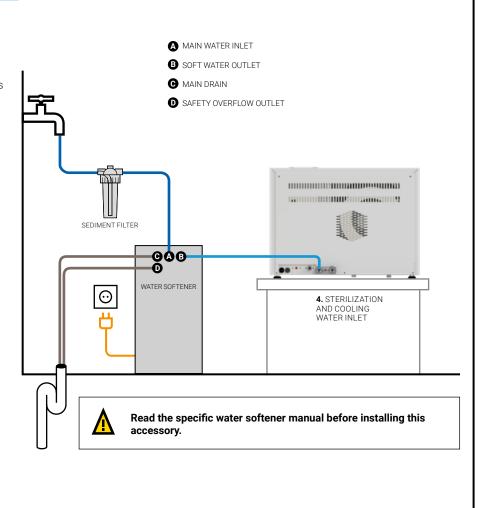
Soft water must be driven from the SOFT WATER OUTLET **(B)** to the STERILIZATION AND COOLING WATER INLET **(4)** of the autoclave using the 2m long included hose.

The pre-installed drainage hoses: MAIN DRAIN **(C)** and SAFETY OVERFLOW OUTLET **(D)** must be driven to the drain.

Water softener inlet and drainage hoses must always be visible and in good condition.

Water softener dimensions: L x D x H: 290 x 530 x 660 mm

Sediment filter dimensions: L x D x H: 170 x 140 x 340 mm





CFS-H SERIES

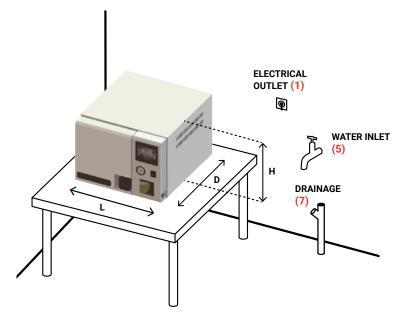
CFS-21H

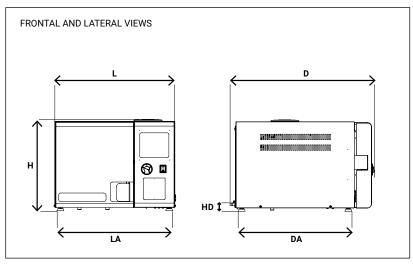


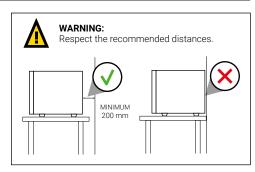
DIMENSIONS TO CONSIDER FOR THE INSTALLATION OF YOUR AUTOCLAVE

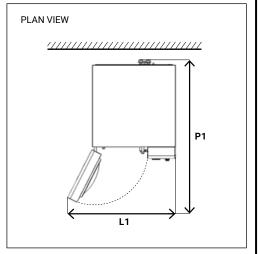
For safety reasons, the distance between both sides of the autoclave and the wall or any other object must be 100 mm, and between the autoclave and the rear wall must be at least 200 mm.

MODEL	L LENGTH with closed door	L1 LENGTH with maximum door opening	D Depth	D1 DEPTH with maximum door opening	H HEIGHT	LA X DA SUPPORT AREA	HD STERILIZATION CHAMBER DRAIN AND STEAM PURGE OUTLET HEIGHT
CFS-21H	560 mm	740 mm	690 mm	980 mm	420 mm	537 x 527 mm	33 mm









ENVIRONMENTAL CONDITIONS

This autoclave can operate under the following maximum conditions:

- Ambient temperature: 30 °C
- Humidity: 75%
 Altitude: 3,000 meters above sea level. Take into account that from 1,000 meters above sea level an adjustment of the purge parameter must be made; consult with our technical team.

CFS-H SERIES

CFS-21H

AUTOCLAVE MAINTENANCE

Autoclaves are like cars: they need regular maintenance for them to work properly, to ensure good condition, prevent deterioration of its components, and maximize their useful life. Frequent cleaning and regular maintenance are essential, as autoclaves work at high pressures and temperatures and are therefore subject to a high level of stress.

We recommend adjusting the schedules of maintenance and cleaning tasks such as the automatic cleaning program or cleaning of the sterilization chamber according to the frequency of equipment use.



DAILY MAINTENANCE

Clean the gasket and the interior of the sterilization chamber door using a clean cotton towel with a soft vinegar solution (or similar product) to minimize the appearance of lime deposits.

For external surfaces, use a clean cotton towel with a little bit of water and neutral detergent. Dry all surfaces afterwards. Finally, check for residues or food leftovers inside the sterilization chamber before using it again.



WEEKLY MAINTENANCE

Execute the predefined automatic cleaning program and clean the inside of the sterilization chamber, heating elements protective cover, frame and trays.

To start the sterilization chamber cleaning, a small amount of neutral detergent must be added inside the sterilization chamber; then start the default P1-CLEANING program in the equipment. It is important to perform this operation without any product load, only with the frame, trays, and resistance protective rack.

For external surfaces, use a clean cotton towel with a little bit of water and neutral detergent.

If lime deposits appear inside the sterilization chamber, this means the water used for feeding the autoclave is too hard and the status of the water softening system must be checked.



MONTHLY MAINTENANCE

CFS-21H autoclaves have a particle filter that captures any possible leftovers from processed samples. It is located at the lower front part behind the sterilization chamber door.

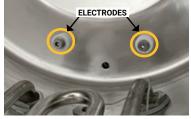
Depending on application and usage, we recommend a monthly cleaning of the particle filter. With time, this filter should be replaced with a new one.

To clean the particle filter, loosen the cap detailed in the picture at the bottom of the page using a screwdriver (place the provided plastic tray beneath to collect any trapped water). Then place the filter under a water stream. Use hot water and a scourer to remove any embedded leftovers.

Also, pay special attention to cleaning the electrodes which control the water level. They are located inside the sterilization chamber and are critical to the proper functioning of the equipment. They must be cleaned gently using a scourer to remove accumulated lime or food leftovers. Always leave the metal of the electrodes clean and visible.



 $\label{prop:prop:cont} \mbox{Filter located at the lower front part after opening the door.}$



Electrodes which control the water level located inside the sterilization chamber.





CFS-H SERIES

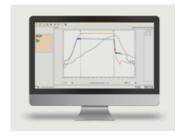
CFS-21H



YEARLY MAINTENANCE

Usage of the autoclave causes a slight progressive imbalance in the temperature values measured by the chamber temperature probe and the flexible core temperature probe which is inserted inside the reference sample. This is why an annual calibration must be performed to verify and validate the proper operation of both temperature probes.

From the autoclave screen, authorized technicians can calibrate the temperature probes as needed.





TWO-YEAR MAINTENANCE

Replace the silicone gasket from the sterilization chamber door. The gasket loses resistance over time and ensuring a proper hermetic sealing of the sterilization chamber is crucial.

Gasket replacement is a delicate operation, and it must be carried out by authorized technicians, the gasket may break when handling it or, if installed incorrectly, the sterilization chamber hermetic sealing might be compromised.



TECHNICAL SUPPORT, ORIGINAL SPARE PARTS AND FOOD CONSULTANCY

For an optimal functioning of the autoclave, always use original spare parts and have a specialized technician perform relevant maintenance (temperature probe calibration or gasket replacement) regularly.

In case of failure, doubts about how to process a product, or for more information about TERRA Food-Tech® autoclave maintenance, remember you can contact our technical support service and nutritional guidance service using the following contact details.



Technical support sat@terrafoodtech.com +34 937 830 720



Food consultancy

foodconsultancy@terrafoodtech.com +34 937 830 720

GENERAL WARNINGS

- Do not perform any maintenance task without previously ensuring the autoclave power is off.
- Do not wash the autoclave using direct water jets; possible water filtrations inside the autoclave may affect its parts and proper operation.
- Do not use sharp or cutting tools either while cleaning the sterilization chamber or cleaning exterior surfaces.
- Do not use metal towels or brushes, or other abrasive materials or products to clean the autoclave and its parts.
- Do not use chemicals or other substances not recommended by the manufacturer for cleaning the sterilization chamber.
- Do not use acid cleansers, bleach solvents or saline solutions for cleaning.
- Try to periodically eliminate lime deposits and food leftovers from inside the sterilization chamber, door or gasket.

CFS-H SERIES

CFS-50H AND CFS-75H

ELECTRICAL CONNECTION STANDARD

The following table shows the plug configuration according to IEC and SCHUKO international standards. For customers who require other plugs and other electrical configurations, please contact our technical team.

MODELS	FREQUENCY	POWER	AMPERES / PHASE	VOLTAGE	CONNECTION
CFS-50H	50/60 Hz	2800 W	12 A	230 (1P+N+PE) V	16 A 1
CFS-50H-115V	50/60 Hz	2800 W	23 A	120 (1P+N+PE) V	32 A 🕕
CFS-75H	50/60 Hz	3200 W	14 A	230 (1P+N+PE) V	16 A 1
CFS-75H-115V	50/60 Hz	3200 W	27 A	120 (1P+N+PE) V	32 A 🕕













16 A

32 A

ELECTRIC CONNECTION NORTH AMERICA

The following table shows the plug configuration according to the NEMA standard for the United States and other countries. For customers who require other plugs and other electrical configurations, please contact our technical team.

MODELS	FREQUENCY	POWER	AMPERES / PHASE	VOLTAGE	CONNECTION
CFS-50H-115V-US	50/60 Hz	2800 W	23 A	120 (1P+N+PE) V	NEMA 5-30P 1
CFS-75H-115V-US	50/60 Hz	3200 W	27 A	120 (1P+N+PE) V	NEMA 5-50P 2







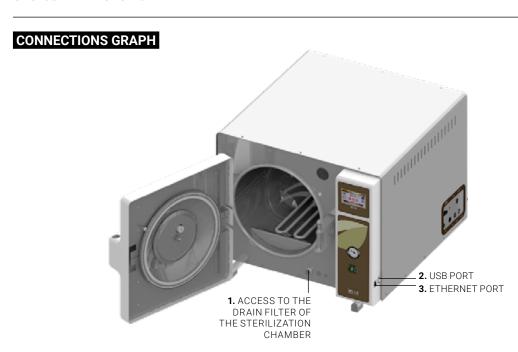


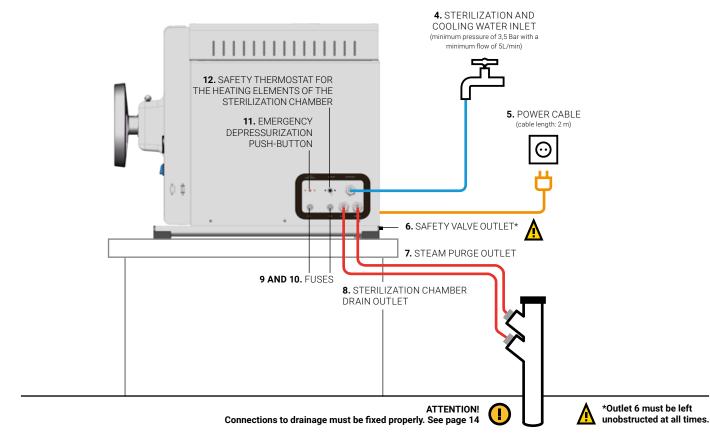
5-30R

5-50R



CFS-50H AND CFS-75H





CFS-H SERIES

CFS-50H AND CFS-75H

COMPONENTS INCLUDED

In addition to the accessories chosen at the time of purchase of the autoclave (basket, bag supports, frame, trays, water softener, software kit, additional drilling kits, etc.), the following components are always included:



1 stainless steel protective cover for the heating elements to place on the inner base of the sterilization chamber.

MODELS	DIMENSIONS LXD
CFS-50H	235 x 370 mm
CFS-75H	235 x 570 mm



1 auxiliary plastic tray, 250×350 mm, to collect the condensed water after opening the door or while cleaning the filter.



3 reinforced NBR hoses 2 m long with 3/4" connection at both ends for threaded connection to the equipment and tap (gaskets included).

For:

- 4. STERILIZATION AND COOLING WATER INLET
- 7. STEAM PURGE OUTLET
- 8. STERILIZATION CHAMBER DRAIN OUTLET



Drilling kit for containers with metallic lids with the following components:

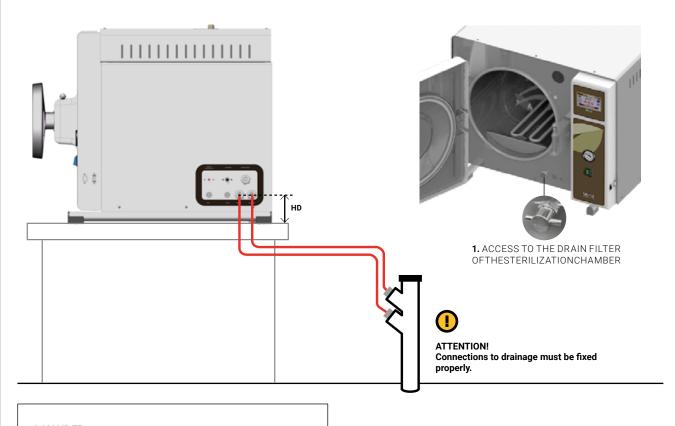
- 1 perforation bore
- 10 Ø4 mm rubber gaskets
- 5 Ø4 mm rubber O-rings
- 5 metallic drill nuts
- 16 plastic spacers, 2 of each of the following sizes: 20, 30, 40, 50, 60, 70, 80 and 90 mm $\,$

CFS-50H AND CFS-75H

DRAINAGE CONNECTIONS

CFS-50H and CFS-75H autoclaves have a STERILIZATION CHAMBER DRAIN OUTLET **(8)** and a STEAM PURGE OUTLET **(7)** which must be connected independently to a drainage using the provided hoses. These autoclaves mix cold water from the mains with hot water coming from inside the sterilization chamber, which drastically reduces the temperature at which water is conducted to the drainage from a maximum of 70 °C to 50 °C depending on the cycle used and the mains water temperature.

To clean the drain filter, loosen the screw on the ACCESS TO THE DRAIN FILTER OF THE STERILIZATION CHAMBER (1) while placing the provided plastic tray underneath to collect any remaining water.



CONSIDER:

Drain and steam purge connections height and position in relation to the autoclave support area.

	DRAINAGE HEIGHT: STERILIZATIONCHAMBERDRAINAND STEAM PURGE OUTLET
CFS-50H	95 mm
CFS-75H	95 mm

CFS-H SERIES

CFS-50H AND CFS-75H

WATER SUPPLY FOR STERILIZATION AND COOLING

CFS-H Series autoclaves have automatic filling of the sterilization chamber inner base where the heating elements are located, which produce steam during normal operation of the autoclave. They also have automatic filling of the sterilization chamber using water shower during the final fast cooling phase.

Soft water must be used (see table below) to prevent the settling of lime residue inside the deposit. Input options A and B are available using the STERILIZATION AND COOLING WATER INLET (4) connection with the provided hose.

A. Using a soft water network that will directly connect to the automatic water supply inlet of the autoclave.



SOFT WATER NETWORK 3/4" GAS TAP Minimum pressure of 3,5 Bar with a minimum flow of 5L/min

B. Using a hard water network going through the water softener and connecting this to the automatic water supply inlet of the autoclave.



SOFT WATER NETWORK 3/4" GAS TAP Minimum pressure of 3,5 Bar with a minimum flow of 5L/min



WATERSOFT-11 water softener (accessory)



WATER TYPE	MG/L ¹	FH ²	DH ³	EH⁴
Soft water	≤17	≤1.7	≤0.95	≤1.19
Slightly hard water	≤60	≤6.0	≤3.35	≤4.20
Moderately hard water	≤120	≤12.0	≤6.70	≤8.39
Hard water	≤180	≤18.0	≤10.05	≤12.59
Very hard water	>180	>18.0	>10.05	>12.59

 $^{^1}$ Mg/L: calcium carbonate (CaCO $_3$) milligrams per liter of water. 2 FH: French hardness (10.0 mg CaCO $_3$ /L).

³ DH: German hardness (17.8 mg CaCO₃/L). ⁴ EH: English hardness (14.3 mg CaCO₃/L).



CFS-50H AND CFS-75H

WATER SOFTENER INSTALLATION

If you don't have a soft water mains available where you intend to install your CFS-50H or CFS-75H autoclave, we recommend using the WATERSOFT-11 water softener.

The WATERSOFT-11 water softener comes with all hoses needed for installation (hoses are 2 meters long), one particle filter equiped with a cartridge and a water hardness measuring kit.

The HARD WATER MAINS INLET **(A)** must be connected from the water softener to the water main with the provided 2m hose after going through the included sediment filter (water temperature from the main must be between 5 °C and 38 °C).

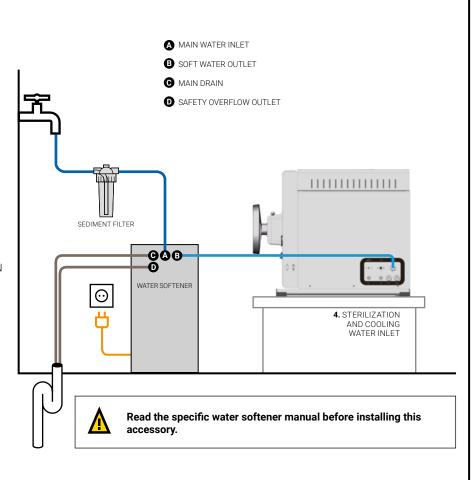
Soft water must be driven from the SOFT WATER OUTLET **(B)** to the STERILIZATION AND COOLING WATER INLET **(4)** of the autoclave using the 2m long included hose.

The pre-installed drainage hoses: MAIN DRAIN **(C)** and SAFETY OVERFLOW OUTLET **(D)** must be driven to the drain.

Water softener's inlet and drainage hoses must always be visible and in good condition.

Water softener dimensions: L x D x H: 290 x 530 x 660 mm

Sediment filter dimensions: L x D x H: 170 x 140 x 340 mm





CFS-H SERIES

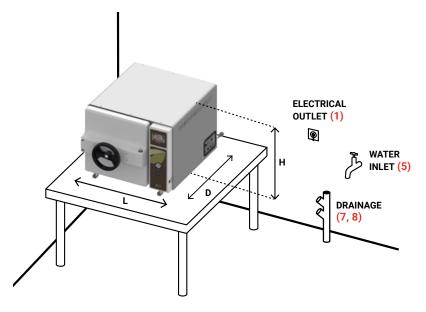
CFS-50H AND CFS-75H

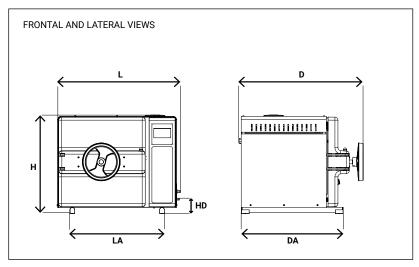


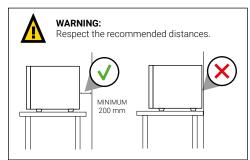
DIMENSIONS TO CONSIDER FOR THE INSTALLATION OF YOUR AUTOCLAVE

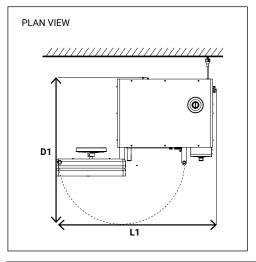
For safety reasons, the distance between both sides of the autoclave and the wall or any other object must be 100 mm, and between the autoclave and the rear wall must be at least 200 mm.

MODEL	L	L1	D	D1	н	LA × DA	HD
	LENGTH with closed door	LENGTH with maximum door opening	DEPTH	DEPTH with maximum door opening	HEIGHT	SUPPORT AREA	STERILIZATION CHAMBER DRAIN AND STEAM PURGE OUTLETS HEIGHT
CFS-50H	790 mm	1240 mm	800 mm	1230 mm	650 mm	622 x 670 mm	95 mm
CFS-75H	790 mm	1240 mm	1000 mm	1430 mm	650 mm	622 x 830 mm	95 mm









ENVIRONMENTAL CONDITIONS

This autoclave can operate under the following maximum conditions:

- Ambient temperature: 30 °C
- Humidity: 75%Altitude: 3,000 meters above sea level. Take into account that from 1,000 meters above sea level an adjustment of the purge parameter must be made; consult with our technical team.

CFS-H SERIES

CFS-50H AND CFS-75H

AUTOCLAVE MAINTENANCE

Autoclaves are like cars: they need regular maintenance for them to work properly, to ensure good condition, prevent deterioration of its components, and maximize their useful life. Frequent cleaning and regular maintenance are essential, as autoclaves work at high pressures and temperatures and are therefore subject to a high level of stress.

We recommend adjusting the schedules of maintenance and cleaning tasks such as the automatic cleaning program or cleaning of the sterilization chamber according to the frequency of equipment use.



DAILY MAINTENANCE

Clean the gasket and the interior of the sterilization chamber door using a clean cotton towel with a soft vinegar solution (or similar product) to minimize the appearance of lime deposits.

For external surfaces, use a clean cotton towel with a little bit of water and neutral detergent. Dry all surfaces afterwards. Finally, check for residues or food leftovers inside the sterilization chamber before using it again.



WEEKLY MAINTENANCE

Execute the predefined automatic cleaning program and clean the inside of the sterilization chamber, heating elements protective cover, frame and trays.

To start the sterilization chamber cleaning, add a small amount of neutral detergent inside the sterilization chamber, then start the predefined P1-CLEANING. It is important to perform this operation without any product load, only with the frame, trays, and heating elements protective cover.

For external surfaces, use a clean cotton towel with a little bit of water and neutral detergent.

If lime deposits appear inside the sterilization chamber, this means the water used for feeding the autoclave is too hard and the status of the water softening system must be checked.





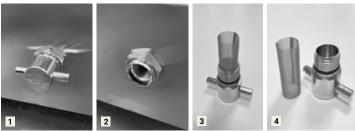
MONTHLY MAINTENANCE

CFS-50H and CFS-75H benchtop autoclaves have a particle filter that captures any possible leftovers from processed samples; it is located at the lower front part behind the sterilization chamber door.

Depending on application and usage, we recommend a monthly cleaning of the particle filter. With time, this filter should be replaced with a new one.

To clean the particle filter, loosen the cap detailed in the picture at the bottom of the page; place the provided plastic tray beneath to collect any remaining water. Then place the filter under a water stream. Use hot water and a scourer to remove any embedded leftovers.

In addition, there is a buoy in the inner base of the sterilization chamber which measures and controls the water level during cycles. This is a very important component for correct equipment operation.



Filter located at the lower front part after opening the door.

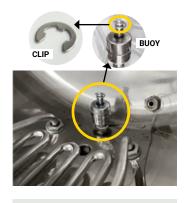
CFS-H SERIES

CFS-50H AND CFS-75H

The free movement of the buoy (up and down) must be verified each month. Otherwise, clean the buoy and its shaft.

To clean the buoy, first remove the upper clip, then lift buoy and clean it. Finally, check that the buoy moves freely up and down. When the buoy is correctly placed, a \bigcirc symbol (a water drop) is visible on the autoclave screen.

It is important to place the buoy clip in the same direction as it was before manipulation, otherwise the water level detection of the autoclave will be compromised.

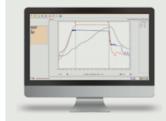




YEARLY MAINTENANCE

Usage of the autoclave causes a slight progressive imbalance in the temperature values measured by the chamber temperature probe and the flexible core temperature probe which is inserted in the reference sample. This is why an annual calibration must be performed to verify and validate the proper operation of both temperature probes.

From the autoclave screen, authorized technicians can calibrate the temperature probes as needed.





TWO-YEAR MAINTENANCE

Replace the silicone gasket of the sterilization chamber door. The gasket loses resistance over time and ensuring a proper hermetic sealing of the sterilization chamber is crucial.

Gasket replacement is a delicate operation, and it must be carried out by authorized technicians, the gasket may break when handling it or, if installed incorrectly, the sterilization chamber hermetic sealing might be compromised.



TECHNICAL SUPPORT, ORIGINAL SPARE PARTS AND FOOD CONSULTING SERVICES

For an optimal functioning of the autoclave, always use original spare parts and have a specialized technician perform relevant maintenance (temperature probe calibration or gasket replacement) regularly.

In case of failure, doubts about how to process a product, or for more information about TERRA Food-Tech® autoclave maintenance, remember you can contact our technical support service and nutritional guidance service using the following contact details.



Technical support sat@terrafoodtech.com +34 937 830 720



Food consultancy

foodconsultancy@terrafoodtech.com +34 937 830 720

GENERAL WARNINGS

- Do not perform any maintenance task without previously ensuring the autoclave power is off.
 Do not wash the autoclave using direct water jets; possible water filtrations inside the autoclave may affect its parts and proper operation.
- Do not use sharp or cutting tools either while cleaning the sterilization chamber or cleaning exterior surfaces.
- Do not use metal towels or brushes, or other abrasive materials or products to clean the autoclave and its parts.
 Do not use chemicals or other substances not recommended by the manufacturer for cleaning the sterilization chamber.
- Do not use acid cleansers, bleach solvents or saline solutions for cleaning.
- Try to periodically eliminate lime deposits and food leftovers from the sterilization chamber, door or gasket.











